

Successful treatment by doxycycline of endocarditis caused by ornithosis

L J E WALKER, A A J ADGEY

From the Regional Medical Cardiology Centre, Royal Victoria Hospital, Belfast, Northern Ireland

SUMMARY The case of a 59 year old man with ornithosis endocarditis and a history of contact with pheasants is reported. Treatment with oxytetracycline was not tolerated and so doxycycline was substituted. Over the two year follow up the patient's clinical condition and serial echocardiographic appearances improved and *Chlamydia psittaci* complement fixation titres returned to normal. Valve replacement was not required.

Case report

A 59 year old security officer was admitted to hospital in Londonderry, on 4 August 1983. He gave a six month history of loss of energy, anorexia, excessive sweating, non-productive cough, mild shortness of breath, and weight loss of 16 kg. Early on in the illness, he had noticed headaches in the morning. There was no previous cardiac history. Medication on admission was oral iron. He had not received antibiotics.

He kept chickens, which appeared to be healthy. He had not been in contact with budgerigars, turkeys, pigeons, parakeets, or cats.

He was thin on admission, with a temperature of 100°F (37.75°C). Early finger clubbing was present, but there were no petechiae or splinter haemorrhages. There was no lymphadenopathy. A grade 3/6 apical systolic murmur radiating to the axilla and a grade 1/6 early diastolic murmur along the left parasternal edge were heard. Chest was clinically clear. The spleen was enlarged (3 fingerbreadths) but the liver was not. Fundoscopy was normal.

The initial haemoglobin concentration (10 g/dl) and red cell indices, and white cell, platelet and reticulocyte counts were normal. The erythrocyte sedimentation rate was > 150 mm/h. Blood urea and electrolyte concentrations and liver function tests were normal. Six blood cultures showed no growth. Gammaglobulin was 50 g/l (normal range 7-15 g/l), C3 complement 0.42 g/l (normal range 0.5-1.2 g/l),

and C4 0.18 g/l (normal range 0.2-0.5 g/l). Circulating immune complexes were not detected. Urine microscopy showed no red cells and a chest x ray indicated slight cardiomegaly. Electrocardiogram showed mild left ventricular hypertrophy on voltage criteria. Serological testing for Q fever, *Brucella*, *Mycoplasma pneumoniae*, and the Paul-Bunnell reaction were negative. The *Chlamydia psittaci* complement fixation titre was 1:160. M mode echocardiography showed a vegetation on the mitral valve.

Culture negative endocarditis was diagnosed. Intravenous benzylpenicillin (16 megaunits) and gentamicin (240 mg) given daily in divided doses were started on the second day of admission. After this treatment the patient felt better and there was no fever. Splenomegaly diminished rapidly.

On the tenth day of admission the patient was transferred to our centre. Cross sectional echocardiography confirmed a vegetation on the mitral valve. There was moderate mitral and aortic incompetence. The non-coronary cusp of the aortic valve, which was tricuspid, appeared to be partially disrupted.

After three weeks, penicillin treatment was withdrawn because severe neutropenia developed. The white cell count recovered rapidly after withdrawal of the drug. Vancomycin was substituted and gentamicin was continued. Six weeks after his initial admission to hospital the *Chlamydia psittaci* complement fixation titre was 1:1280 and oxytetracycline (250 mg orally four times a day) was started. Vancomycin (which he had been given for three weeks) and gentamicin (for six weeks) were discontinued.

Further questioning at this stage revealed a new

Requests for reprints to Dr L J E Walker, Regional Medical Cardiology Centre, Royal Victoria Hospital, Belfast BT12 6BA, Northern Ireland.

possible source of infection—his son's pheasants. The patient, who was responsible for feeding them, had noticed that two of them had been unwell and that they were "shedding feathers". Six months before admission he had injured the palm of his right hand on the barbed wire fence enclosing the pheasants. The pain caused by the injury was so severe that he was unable to use his hand for three days.

Because oxytetracycline caused nausea and vomiting in this patient we treated him with doxycycline (200 mg orally daily), which was well tolerated. Treatment was continued for two years, and during this time he gained weight, and the haemoglobin, erythrocyte sedimentation rate, and high γ globulin concentration became normal. The *Chlamydia psittaci* complement fixation titre reverted to 1:160. Serial echocardiography (fig a and b) showed that the vegetation on the mitral valve became smaller. Moderate mitral and aortic incompetence persist.

Disposal of the birds by the patient's family was unsatisfactory; the chickens were sold and the pheasants were set free.

Discussion

Endocarditis caused by *Chlamydia* is rare. In a recent review of 544 episodes of infective endocarditis in 541 patients Bayliss *et al* reported nega-

tive blood cultures in 53 cases.¹ *Chlamydia* was only implicated in one case. In an earlier review by Pesanti and Smith of 52 cases of culture negative endocarditis, *Chlamydia* was not mentioned.² We have found nine published reports of *Chlamydia psittaci* throughout the world.³⁻⁹ Of these six survived. Three of these owed their survival to valve replacement.^{3,4,9} The only patient in whom medical treatment alone was successful was described by Jarwalla *et al*.⁷ In their patient tetracycline treatment failed but rifampicin was successful.

Most patients had been in contact with birds—budgerigars, parrots, canaries, and pigeons seemed to be the main sources of infection. In 1967 Meyer reviewed the host range of *Chlamydia* and tabulated about 130 species of birds known to harbour *Chlamydia*.¹⁰ Other animals, including the domestic cat, can spread the disease. Regan *et al* reported infective endocarditis with glomerulonephritis associated with *Chlamydia psittaci* infection of a cat.¹¹ In our patient the birds that appeared to have been infected were the pheasants. Nevertheless, apparently healthy chickens can harbour the organism. We could not confirm the source of infection, because all of the birds had been disposed of; unfortunately they were not destroyed as has been recommended.¹²

On at least three occasions our patient had been questioned closely about avian contact. The fact that

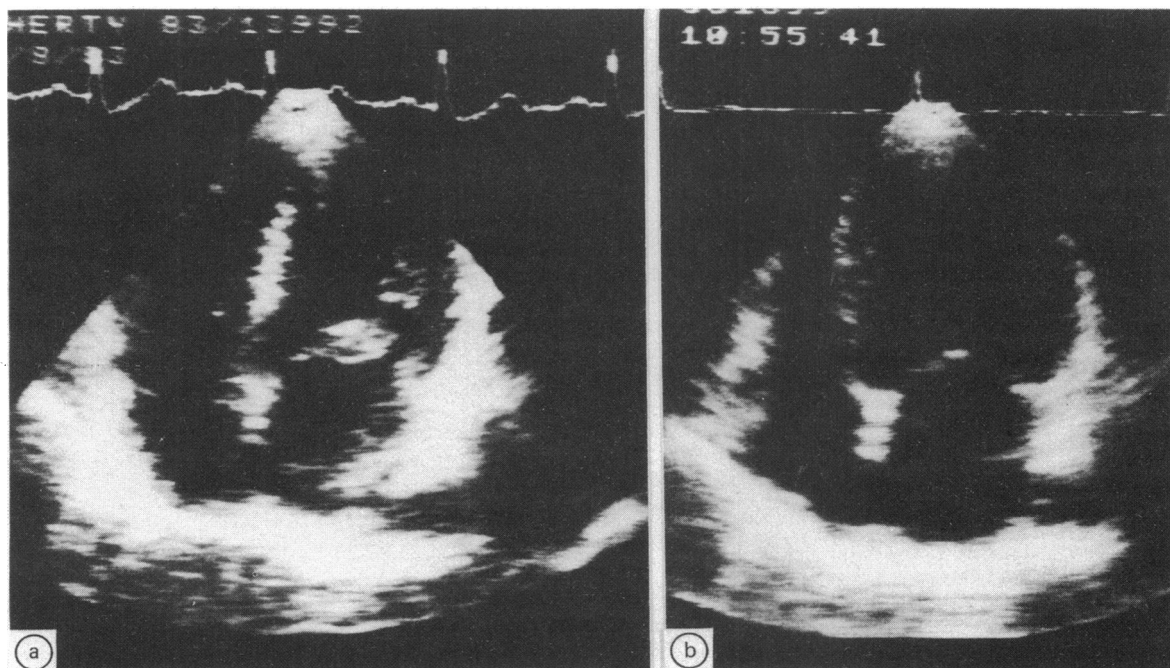


Figure Cross sectional echocardiograms of a four chamber view obtained in September 1983 (a) and showing a vegetation on the mitral valve and (b) in August 1985. The size of the vegetation on the mitral valve is considerably reduced in (b).

the most relevant part of the history only emerged after repeated questioning is in keeping with the experience of others, who have found that a history of exposure to birds is often only obtained after repeated questioning.

This patient is unusual in that pneumonitis did not appear as a major complication, nor was it the reason for presentation.¹³ Cardiac complications of chlamydial infection include myocarditis,^{14 15} pericarditis,¹⁶ and endocarditis.³⁻⁹ In addition, Ward and Ward have suggested a link between chronic infection and acquired valve disease.¹⁷ Embolic phenomena have been described,⁵ but were not a feature in this case.

The initial good response to benzylpenicillin and gentamicin treatment was undoubtedly due to the penicillin; however, many workers have observed penicillin treatment failures. The aminoglycosides have no demonstrable activity against the organism.¹⁰ There is another published report of successful medical treatment with doxycycline; however, the patient died a month after double valve replacement that was carried out approximately two years after the initial presentation.¹¹ Because *Chlamydia psittaci* is an intracellular organism,¹⁶ and tetra-cycline is only a static agent the patient is being kept under close review in case the need for long term doxycycline treatment or valve replacement or both arises. Oakley has suggested that valve replacement should be carried out in most cases.¹⁸ After two years' follow up, the *Chlamydia psittaci* complement fixation titre in our patient remains at 1:160. Valve replacement has not been necessary.

References

- 1 Bayliss R, Clarke C, Oakley CM, Somerville W, Whitfield AGW, Young SEJ. The microbiology and pathogenesis of infective endocarditis. *Br Heart J* 1983;50:513-9.
- 2 Pesanti EL, Smith IM. Infective endocarditis with negative blood cultures. An analysis of 52 cases. *Am J Med* 1979;66:43-50.
- 3 Ward C, Sagar HJ, Cooper D, Ward AM. Insidious endocarditis caused by *Chlamydia psittaci*. *Br Med J* 1975;iv:734-5.
- 4 Birkhead JS, Apostolov K. Endocarditis caused by a psittacosis agent. *Br Heart J* 1974;36:728-31.
- 5 Bromage D, Jeffries DJ, Philip G. Embolic phenomena in chlamydial infection. *Journal of Infection* 1980; 2:151-9.
- 6 Levison DA, Guthrie W, Ward C, Green DM, Robertson PGC. Infective endocarditis as part of psittacosis. *Lancet* 1971;ii:844-7.
- 7 Jariwalla AG, Davies BH, White J. Infective endocarditis complicating psittacosis: response to rifampicin. *Br Med J* 1980;280:155.
- 8 Grist NR, McLean C. Infections by organisms of *Psittacosis/Lymphogranuloma venereum* group in the West of Scotland. *Br Med J* 1964;ii:21-5.
- 9 Jones RB, Priest JB, Kuo CC. Subacute chlamydial endocarditis. *JAMA* 1982;247:655-8.
- 10 Schachter J, Dawson CR. Psittacosis. In: *Human chlamydial infections*. Littleton, Massachusetts: PSG Publishing Company, 1978:9-43.
- 11 Regan RJ, Dathan JRE, Treharne JD. Infective endocarditis with glomerulonephritis associated with cat chlamydia (*C psittaci*) infection. *Br Heart J* 1979;42:349-52.
- 12 Macfarlane JT, Macrae AD. Psittacosis. *Br Med Bull* 1983;39:163-7.
- 13 Murray HW, Tuazon C. Psittacosis. *Med Clin N Am* 1980;64:515-9.
- 14 Coll R, Horner I. Cardiac involvement in psittacosis. *Br Med J* 1967;4:35-6.
- 15 Dymock IW, Lawson JM, MacLennan WJ, Ross CAC. Myocarditis associated with psittacosis. *Br J Clin Pract* 1971;25:240-2.
- 16 Isaacs D. Psittacosis. *Br Med J* 1984;289:510-1.
- 17 Ward C, Ward AM. Acquired valvular heart-disease in patients who keep pet birds. *Lancet* 1974;ii:734-6.
- 18 Oakley CM. Infective endocarditis. *Br J Hosp Med* 1980;24:232-43.